

**METHOD OF MAKING A TUNNEL JUNCTION SENSOR WITH
A SMOOTH INTERFACE BETWEEN A PINNED OR
FREE LAYER AND A BARRIER LAYER**

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ABSTRACT OF THE DISCLOSURE

A method of making provides a smooth surface of a pinned or free layer interfacing a barrier layer in a tunnel junction sensor wherein the smooth surface is an oxidized monolayer of the pinned or free layer. After sputter depositing the pinned or free layer the layer is subjected to an oxygen (O_2) atmosphere which is extremely low for a very short duration. In a preferred embodiment of the invention a partial thickness of the barrier layer is provided with a smooth surface by the same process after which a remainder thickness of the barrier layer is deposited and the barrier layer is exposed to oxygen (O_2) to form an oxide of the deposited metal.

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